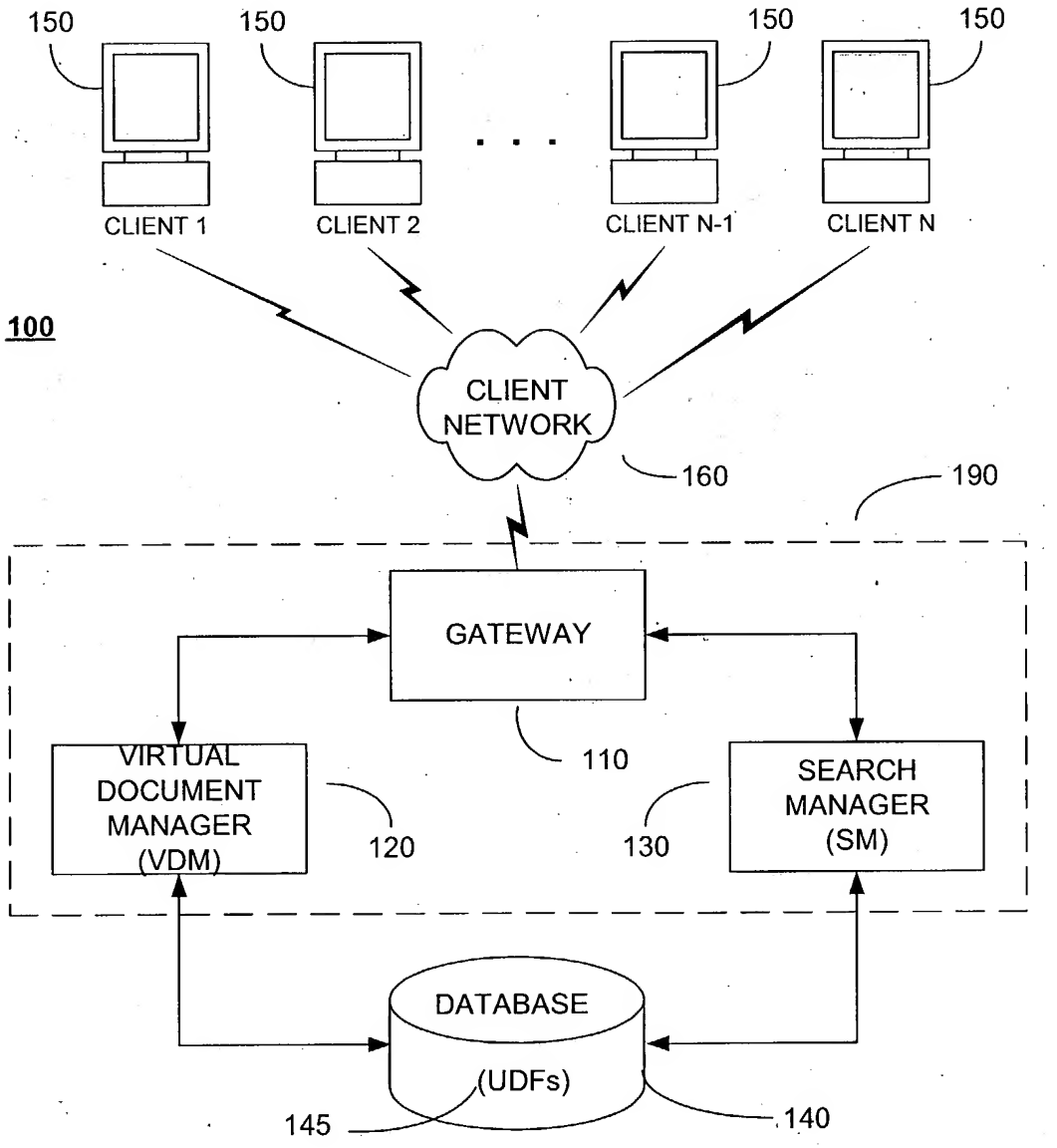

Prior Art

FIG. 1

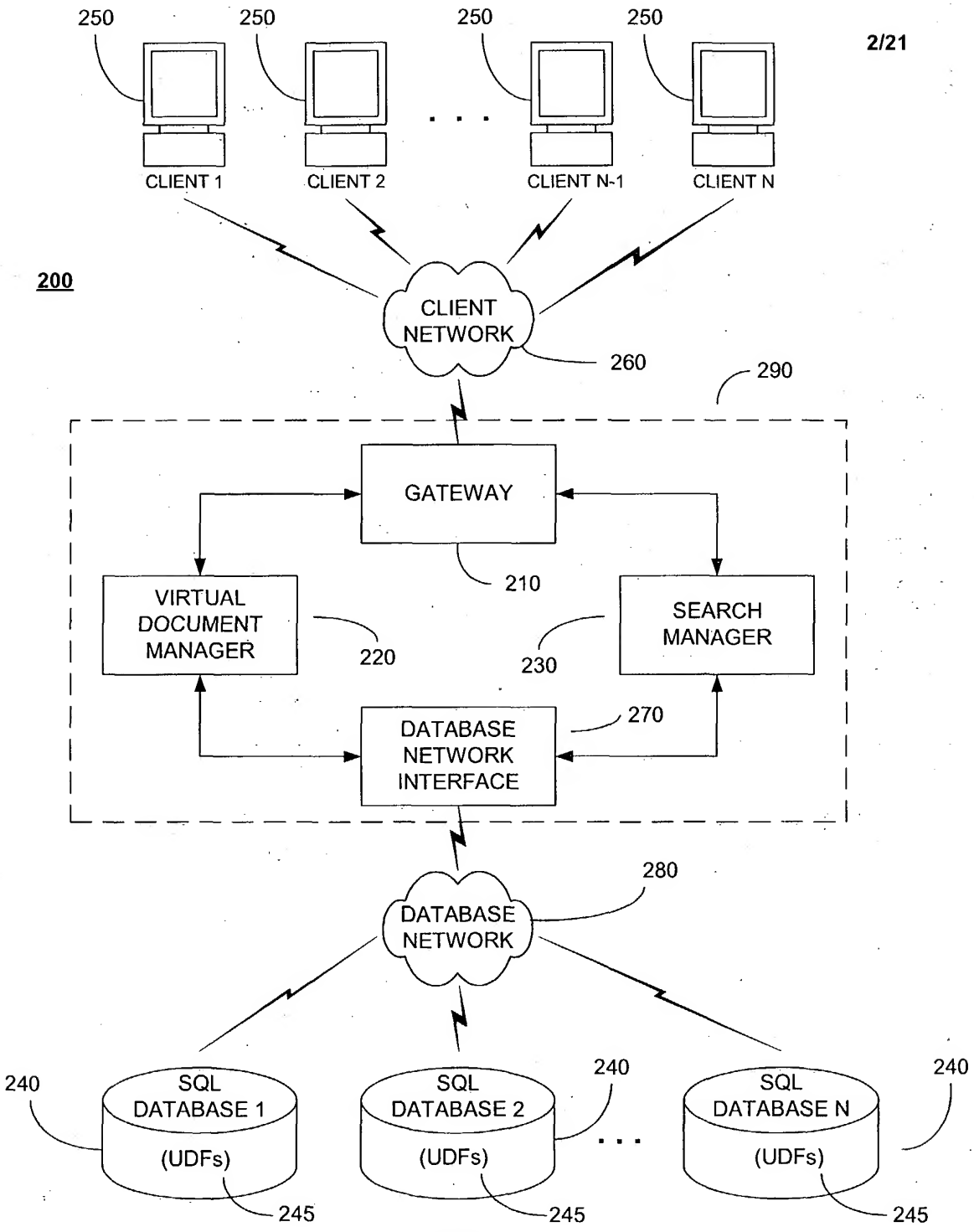
250
250
250
250
CLIENT 1
CLIENT 2
CLIENT N-1
CLIENT N
200
CLIENT NETWORK
260
290
GATEWAY
210
VIRTUAL DOCUMENT MANAGER
220
230
SEARCH MANAGER
270
DATABASE NETWORK INTERFACE
280
DATABASE NETWORK
240
SQL DATABASE 1
(UDFs)
245
SQL DATABASE 2
(UDFs)
245
240
SQL DATABASE N
(UDFs)
245
240

FIG. 2

```
<claim>
    <claimant>
        <name/>
    </claimant>
    <witness>
        <name/>
    </witness>
</claim>
```

FIG. 3

```
    <DATASET connection="">
        <EXPRESSION type="table|sql"></EXPRESSION>
        <BIND>
            <DETAIL>
                <NAME></NAME>
                <TYPE></TYPE>
            </DETAIL>
            <MASTER>
                <NAME></NAME>
                <TYPE></TYPE>
            </MASTER>
        </BIND>
        <PATH>
            <FIELD>
                <NAME></NAME>
                <TYPE></TYPE>
            </FIELD>
        </PATH>
        <CHILDDATASET/>
    </DATASET>
```

FIG. 4

```
<SCHEMA name="">
        <STRUCTURE/>
        <SEMANTICS/>
        <COMPATIBLE/>
        <MAPPING implementation="">
            <DATASET datasource="">
                <EXPRESSION></EXPRESSION>
                 <BIND>
                                <DETAIL>
                                        <NAME></NAME>
                                        <TYPE></TYPE>
                                </DETAIL>
                </BIND>
                <PATH></PATH>
                <FIELD pkey="true">
                                <NAME></NAME>
                                <TYPE></TYPE>
                                <PATH></PATH>
                </FIELD>
                <CHILDDATASET/>
            </DATASET>
        </MAPPING>
    </SCHEMA>
```

FIG. 5

PKEY	NAME_FIRST	NAME_MIDDLE	NAME_LAST
627	BENJAMIN		BENDER
641	BRIAN	K	HOSKINS
1131	BRYAN		DELANCEY
1242	BRIAN		BAILEY
1480	BENJAMIN		STAMM
1674	BRIAN	J	GRUND
1792	BEN	F	NERY
1885	BRIAN		PRUCKER
2895	BRIAN		ABBOTT
3283	BURTON		TOBEY
3303	BRIAN	H	WALLIS
3538	BNEJAMIN	J	SELLORS
3713	BENJAMIN		MOBLEY
3731	BRIAN	E	LADD
3782	BRIAN		GODEAUX
3869	BROOKS-HARMON		BLAIR
4007	BRIAN		CLARK

FIG. 6

PKEY	ADDRESS	CITY	STATE
627	13588 VIA FLORA	DELRAY BEACH	FL
641	1901 WESTMORELAND BLVD	PORT ST. LUCIE	FL
1131			
1242	108 ELLERBE RD	ROCKINGHAM	NC
1480	2503 COG HILL LN	LAS VEGAS	NV
1674	10121 ROVEOUT LN	COLUMBIA	MD
1792	4935 PALIN ST	SAN DIEGO	CA
1885	1127 TOLLAND TURNPIKE	MANCHESTER	CT
2895	20 BUTLER PLACE	BROOKLYN	NY
3283	6509 GOLDEN PL	TAMPA	FL
3303	531 HALL CT	HAVRE DE GRACE	MD
3538	10184 CLIFF MILLS RD	MARSHALL	VA
3713	704 HUMINGBIRD	KILLEEN	TX
3731	1089 GLENWOOD STREET	DUNEDIN	FL
3782	4605 S INDEPENDENCE	LITTONTON	CO
3869	1335 WIKIUP DR	SANTA ROSA	CA
4007	820 DIXIE AVE NE	ATLANTA	GA

FIG. 7

PKEY			NAME_LAST	ADDRESS	CITY	STATE
627	BENJAMIN		BENDER			FL
641	BRIAN	K	HOSKINS	1901 WESTMORELAND BLVD	PORT ST. LUCIE	FL
1131	BRYAN		DELANCEY			
1242	BRIAN		BAILEY	108 ELLERBE RD	ROCKINGHAM	NC
1480	BENJAMIN		STAMM	2503 COG HILL LN	LAS VEGAS	NV
1674	BRIAN	J	GRUND	10121 ROVEOUT LN	COLUMBIA	MD
1792	BEN	F	NERY	4935 PALIN ST	SAN DIEGO	CA
1885	BRIAN		PRUCKER	1127 TOLLAND TURNPIKE	MANCHESTER	CT
2895	BRIAN		ABBOTT	20 BUTLER PLACE	BROOKLYN	NY
3283	BURTON		TOBEY	6509 GOLDEN PL	TAMPA	FL
3303	BRIAN	H	WALLIS	531 HALL CT	HAVRE DE GRACE	MD
3538	BNEJAMIN	J	SELLORS	10184 CLIFF MILLS RD	MARSHALL	VA
3713	BENJAMIN		MOBLEY	704 HUMINGBIRD	KILLEEN	TX
3731	BRIAN	E	LADD	1089 GLENWOOD STREET	DUNEDIN	FL
3782	BRIAN		GODEAUX	4605 S INDEPENDENCE	LITTONTON	CO
3869	BROOKS HARMON		BLAIR	1335 WIKIUP DR	SANTA ROSA	CA
4007	BRIAN		CLARK	820 DIXIE AVE NE	ATLANTA	GA

FIG. 8

PKEY	NAME_FIRST	NAME_MIDDLE	NAME_LAST
627	benjamin		bender
641	brian	k	hoskins
1131	bryan		delancey
1242	brian		bailey
1480	benjamin		stamm
1674	brian	j	grund
1792	ben	f	nery
1885	brian		prucker
2895	brian		abbott
3283	burton		tobey
3303	brian	h	wallis
3538	bnejamin	j	sellors
3713	benjamin		mobley
3731	brian	e	ladd
3782	brian		godeaux
3869	brooks-harmon		blair
4007	brian		clark

FIG. 9

PKEY	NAME_FIRST
627	0.240740746259689
641	1
1131	0.800000011920929
1242	1
1480	0.240740746259689
1674	1
1792	0.541666686534882
1885	1
2895	1
3283	0.550000011920929
3303	1
3538	0.240740746259689
3713	0.240740746259689
3731	1
3782	1
3869	0.195121943950653
4007	1

FIG. 10

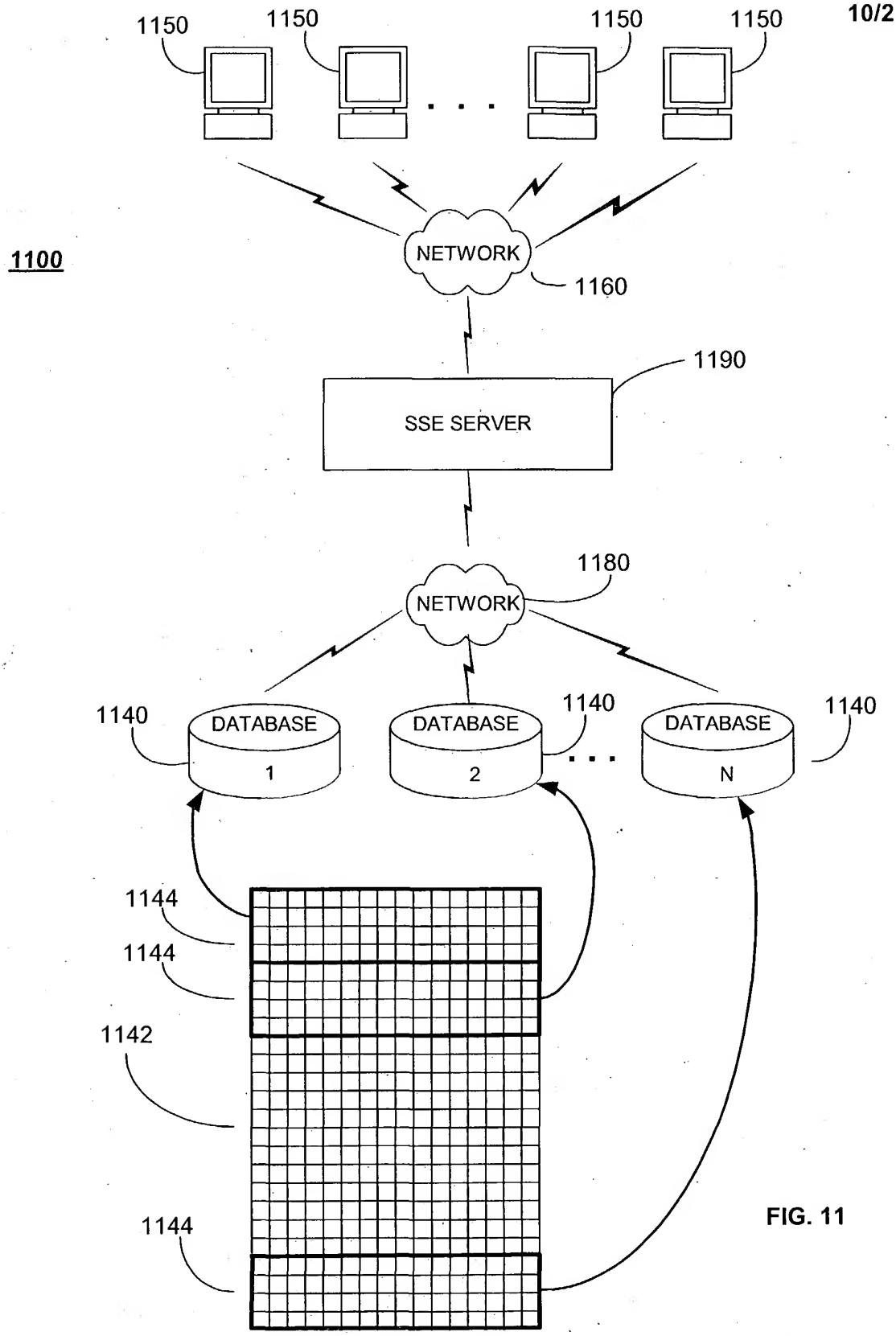
1150
1150
1150
1150
1100
NETWORK
1160
1190
SSE SERVER
1180
NETWORK
1140
DATABASE
1
1140
DATABASE
2
1140
DATABASE
N
1144
1144
1142
1144

FIG. 11

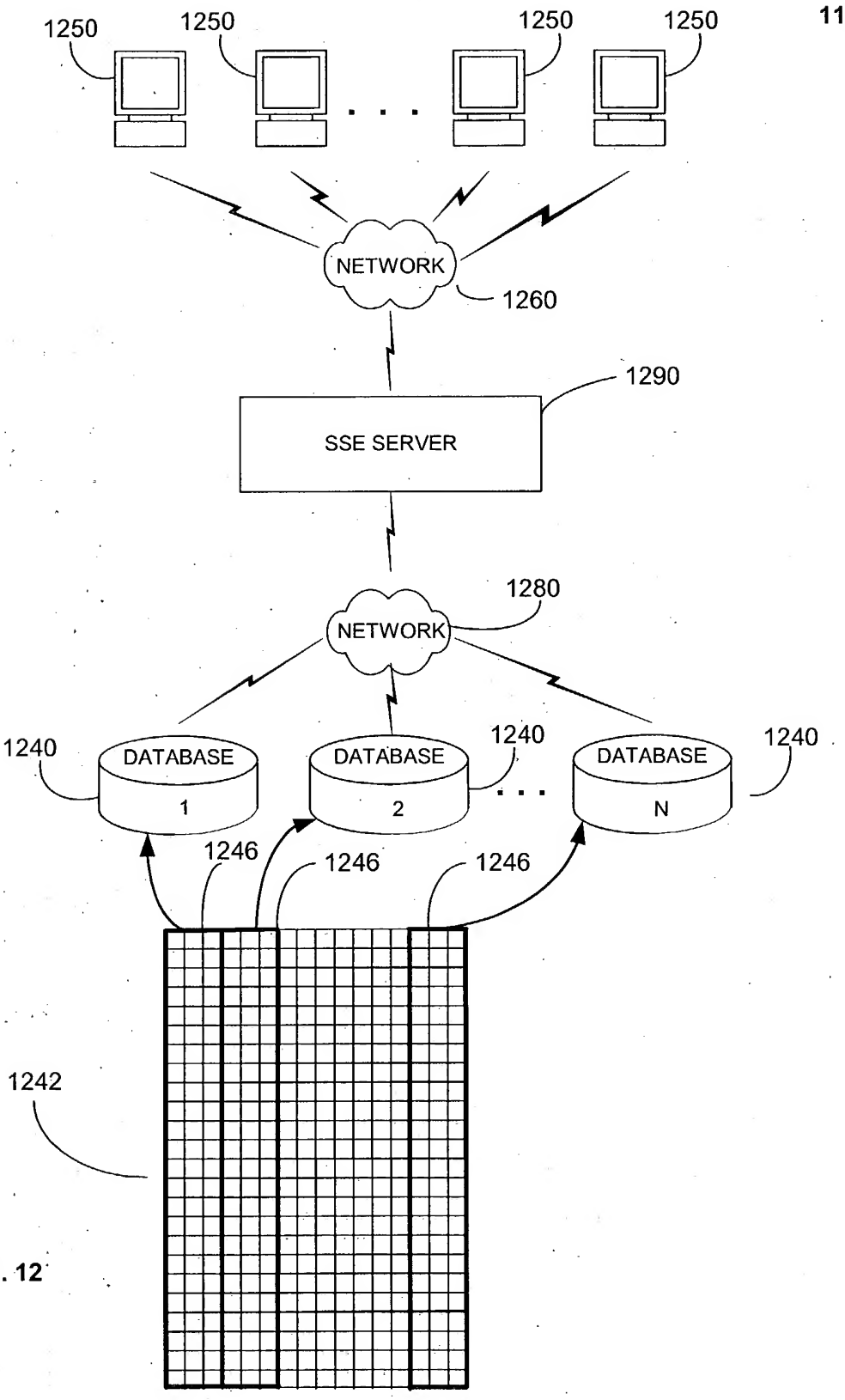
1250
1250
1250
1250
1200
NETWORK
1260
1290
SSE SERVER
1280
NETWORK
1240
DATABASE
1
1240
DATABASE
2
1240
DATABASE
N
1246
1246
1246
1242

FIG. 12

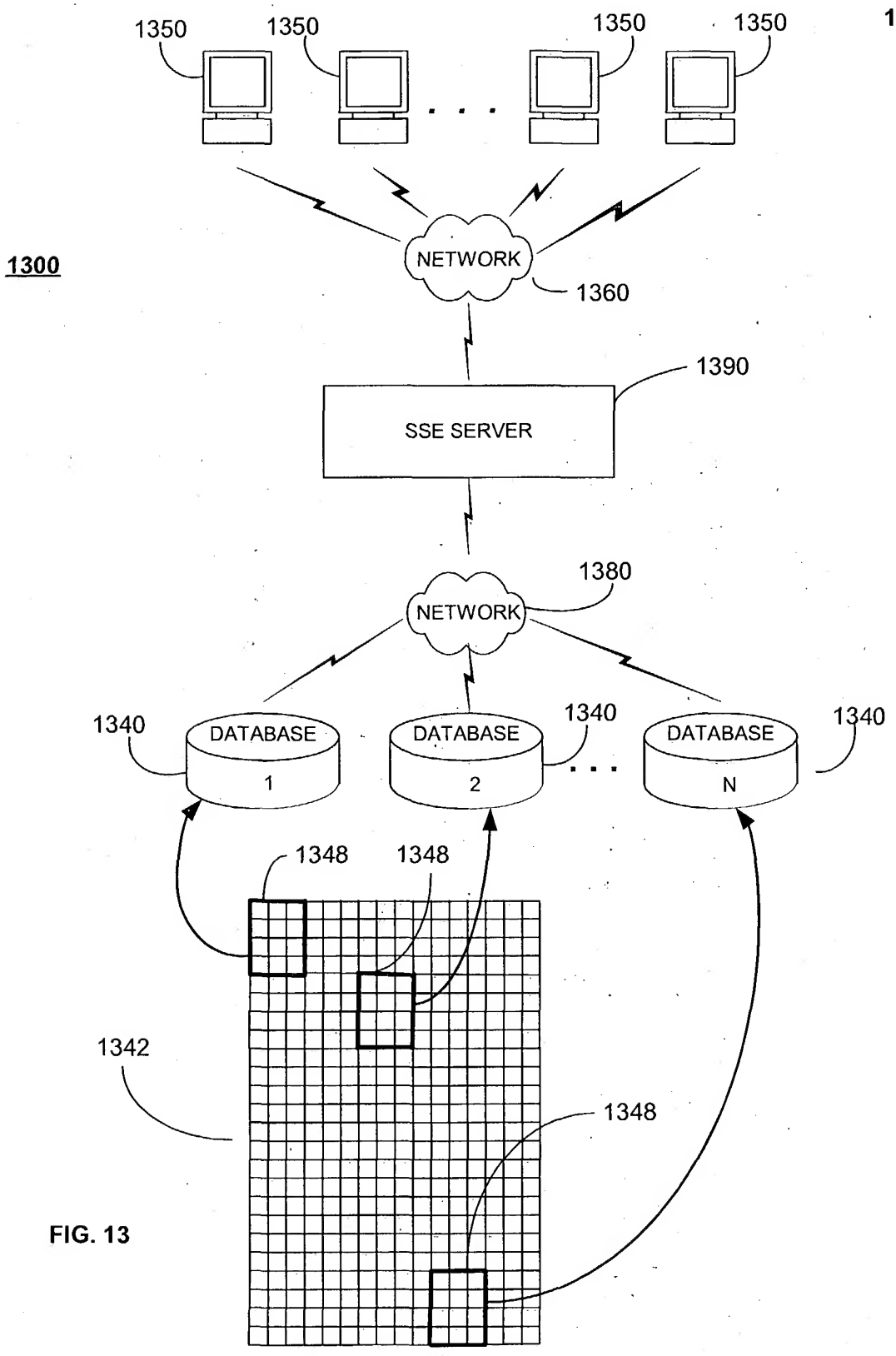
1350
1350
1350
1350
1300
NETWORK
1360
1390
SSE SERVER
1380
NETWORK
1340
DATABASE
1
1340
DATABASE
2
1340
DATABASE
N
1348
1348
1342
1348

FIG. 13

FUNCTION	PURPOSE
NAMEDIFF	Measures name and name parts and understands the difference between first and last names and nicknames
SOUNDEX	Measure how close two name "sound"
STRDIFF	Measure how close two strings are using character transpositions and character noise and white space.

FIG. 14

FUNCTION	PURPOSE
STREETDIFF	Measure the closeness of two string which represent street addresses and understands apt. designations along with street type, direction, and abbreviations
CITY	Measures how close two cities are by both using spelling and considering physical distance using suburbs lookups
ZIP	Measures physical distance of two ZIP codes

FIG. 15

PKEY	NAME_FIRST	SCORE 1	NAME_LAST	SCORE 2
627	BENJAMIN	0.653124988079071	BENDER	0.474999994039536
641	BRIAN	1	HOSKINS	0.125
1131	BRYAN	0.949999988079071	DELANCEY	0.474999994039536
1242	BRIAN	1	BAILEY	0.949999988079071
1480	BENJAMIN	0.653124988079071	STAMM	0.157894730567932
1674	BRIAN	1	GRUND	0.00999999977648258
1792	BEN	0.759999990463257	NERY	0.1875
1885	BRIAN	1	PRUCKER	0.00999999977648258
2895	BRIAN	1	ABBOTT	0.260869562625885
3283	BURTON	0.814285695552826	TOBEY	0.416666656732559
3303	BRIAN	1	WALLIS	0.474999994039536
3538	BNEJAMIN	0.653124988079071	SELLORS	0.474999994039536
3713	BENJAMIN	0.653124988079071	MOBLEY	0.666666686534882
3731	BRIAN	1	LADD	0.210526317358017
3782	BRIAN	1	GODEAUX	0.00999999977648258
3869	BROOKS-HARMON	0.569999992847443	BLAIR	0.855000019073486
4007	BRIAN	1	CLARK	0.474999994039536

FIG. 16

PKEY	SCORE 1	SCORE 2	SCORE 3	SCORE 4
627	1	0.309523820877075	0.109375	0.102564103901386
641	0.653124988079071	0.15384615957737	0.233333334326744	0.009999999776482
1131	0.653124988079071	0.0925925895571709	0	0
1242	0.653124988079071	0.119047619402409	0.224999994039536	0.111111111938653
1480	1	0.157894730567932	0.157142862677574	0.0892857164144516
1674	0.653124988079071	0.009999999776482	0.144067794084549	0.133333340287209
1792	0.746428549289703	0.458333343267441	0.163934424519539	0.111111111938653
1885	0.653124988079071	0.125	0.197368428111076	0.0909090936183929
2895	0.653124988079071	0.474999994039536	0.161764711141586	0.270833343267441
3283	0.474999994039536	1	0.1076923808723927	0.009999999776482
3303	0.653124988079071	0.009999999776482	0.119402982294559	0.095238097012043
3538	1	0.10416666418314	0.242647051811218	0.009999999776482
3713	1	0.75	0.841666695455811	0.958333313465118
3731	0.653124988079071	0.009999999776482	0.243243247270584	0.275000005960464
3782	0.653124988079071	0.307692319154739	0.383928567171097	0.600000023841858
3869	0.514583349227905	0.138888895511627	0.141666665673256	0.009999999776482
4007	0.653124988079071	0.009999999776482	0.161764711141586	0.269230782985687

FIG. 17

PKEY	NAME_FIRST	NAME_MIDDLE	NAME_LAST
12	JOHNNIE	L	SINKFIELD
15	JOHNNIE	L	SINKFIELD
17	JOHNNIE	L	SINKFIELD
28	JOHNNIE	L	SINKFIELD
33	JEAN	M	BUTLER
147	JOAN		SELEFKY
291	JOHN		SMITH
303	JUNE	R	MORRISON
304	JEANNE		VADALA
358	JOAN		WINESTOCK
372	JOHN		BISSMAN
373	JOHN		BISSMAN
375	JOHN		BISSMAN
395	JOANNE		SONTAG
398	JUNE	C	FRIEDEL
399	JUNE	C	FRIEDEL
407	JOHN		SHIVE

FIG. 18

PKEY	2	3
12	0.949999988079071	0.580555558204651
15	0.949999988079071	0.580555558204651
17	0.949999988079071	0.580555558204651
28	0.949999988079071	0.580555558204651
33	0.949999988079071	0.395833313465118
147	0.949999988079071	0.316666662693024
291	1	1
303	0.949999988079071	0.107142858207226
304	0.949999988079071	0.395833313465118
358	0.949999988079071	0.527777791023254
372	1	0.289473682641983
373	1	0.289473682641983
375	1	0.289473682641983
395	0.949999988079071	0.882142841815948
398	0.949999988079071	0.316666662693024
399	0.949999988079071	0.316666662693024
407	1	0.474999994039536

FIG. 19

PKEY	NAME_FIRST	NAME_MIDDLE	NAME_LAST
850551	LORRAINE	A	RIDGLEY
850554	LORRAINE		RIDGLEY
850558	LORRAINE	A	RIDGLEY
850559	JERQALD		RIDGLEY
875808	DEBBY		RIDGLEY
901407	JAMES		RIDGLEY
901415	JAMES	E	RIDGLEY
901417	JAMES	E	RIDGLEY
1704	BEATRICE		RILEY
4171	GEORGE	M	RILEY
8653	ARETHA	L	RILEY
8659	LYTANYA	A	RILEY
13438	VICTORIA		RILEY
13440	ROBERT		RILEY
20982	JIMMIE	M	RILEY

FIG. 20

PKEY	OVERALL
627	0.564062491059303
641	0.5625
1131	0.712499991059303
1242	0.974999994039536
1480	0.405509859323502
1674	0.504999999888241
1792	0.473749995231628
1885	0.504999999888241
2895	0.630434781312943
3283	0.615476176142693
3303	0.737499997019768
3538	0.564062491059303
3713	0.659895837306976
3731	0.605263158679008
3782	0.504999999888241
3869	0.712500005960464
4007	0.737499997019768

FIG. 21

PKEY	OVERALL
627	0.519531242549419
641	0.34375
1131	0.593749992549419
1242	0.962499991059303
1480	0.281702294945717
1674	0.257499999832362
1792	0.330624997615814
1885	0.257499999832362
2895	0.445652171969414
3283	0.516071416437626
3303	0.606249995529652
3538	0.519531242549419
3713	0.663281261920929
3731	0.407894738018513
3782	0.257499999832362
3869	0.783750012516975
4007	0.606249995529652

FIG. 22

PKEY	2	3	4	5	6
8	0.125	0.159999996423721	0.239130437374115	0.009999999776492	0.534375011920929
9	0	0	0	0	0
10	0.300000011920929	0.181818187236786	0.316666662693024	0.474999994039536	0.237499997019768
11	0.240740746259689	0.009999999776492	0.237499997019768	0.474999994039536	0.522499978542328
12	0.240740746259689	0.009999999776492	0.237499997019768	0.474999994039536	0.522499978542328
13	0.240740746259689	0.009999999776492	0.237499997019768	0.474999994039536	0.522499978542328
14	0.395833313465118	0.009999999776492	0.395833313465118	0.3562499880790071	0.316666662693024
15	0.240740746259689	0.009999999776492	0.237499997019768	0.474999994039536	0.522499978542328
16	0	0	0	0	0
17	0.240740746259689	0.009999999776492	0.237499997019768	0.474999994039536	0.522499978542328
18	0.009999999776492	0.009999999776492	0.316666662693024	0.474999994039536	0.237499997019768
102919	0	0	0	0	0
19	0.150000005960464	0.009999999776492	0.316666662693024	0.474999994039536	0.237499997019768
20	0.240740746259689	0.009999999776492	0.237499997019768	0.474999994039536	0.522499978542328
21	0	0	0	0	0
22	0	0	0	0	0

FIG. 23

"MEASURE" // METHOD	DESCRIPTION
"looks_like" // string_diff()	A strongly left-to-right biased general string comparison function that returns a score of from 0.0 to 1.0.
"spelled_like" // CompareEditDistance()	A non-biased general string comparison function that returns a score of from 0.0 to 1.0.
"sounds_like" // CompareSoundex()	Finds and groups family names that are variations on a root name spelling.
"exact" // CompareExact()	Exact, but case-sensitive comparison with boolean-style return.
"near" // CompareDigitStrings()	A smart, lexical comparison of strings known to contain digits, which compensates for typographical errors by using weighting.
"numeric" // CompareNumeric()	A numeric comparison of strings known to contain all digits, returning a fractional score value.
"date" // CompareDate()	Provides a "proximity comparison of dates that returns a score of from 0.0 to 1.0.
"time" // CompareTime()	Provides a "proximity" comparison for times for a range of interest of less than two hours.
"name" // CompareNames()	Provides a tokenized comparison specifically for personal names. Last name is weighted most heavily, then first, then middle.
"telephone" // ComparePhoneNumbers()	Provides a tokenized comparison specifically for telephone numbers. Area code and exchange are weighted most heavily.
"state" // CompareStates()	Provides a smart comparison for U.S. states. Checks standard state abbreviations and maps them to their full name.
"street_address" // CompareStreetAddress()	Provides a tokenized comparison specifically for street addresses. Street name weighted most heavily, then number, apartment, type.
"email" // CompareEmail()	Provides tokenized comparison specifically for email addresses. Name weighted most heavily, then extra, domain, high domain.
"url" // CompareURL()	Provides a tokenized comparison specifically for URL addresses. Domain weighted most heavily, then extra, high domain, www.
"ip_address" // CompareDottedIP()	Provides a tokenized comparison specifically for IP addresses. Group1 weighted most heavily, then group2, group3, group4.
"vin" // CompareVIN()	Provides a tokenized comparison for Vehicle ID Numbers. Group4 weighted most heavily, then group1, group2, group3.
"vehicle_tag" // CompareVehicleTag()	Provides a simple comparison for Vehicle Tags.
"federal_id_number" // CompareFIN()	Provides a simple comparison for Federal ID Numbers.
"credit_card" // CompareCreditCard()	Provides a simple comparison for Credit Card Numbers.
"drivers_license" // CompareDLnumber()	Provides a simple comparison for Drivers License Numbers.
"ssn" // CompareSSN()	Provides a tokenized comparison for Social Security numbers.

FIG. 24A

"MEASURE" // METHOD	DESCRIPTION
"less_than" // CompareLessThan()	Provides a boolean-type comparison for any two strings. The strings may be compared numerically or lexically.
"less_than_equal" // CompareLessThanEqual()	Provides a boolean-type comparison for two strings. The strings may be compared numerically or lexically.
"greater_than" // CompareGreaterThan()	Provides a boolean-type comparison for two strings. The strings may be compared numerically or lexically.
"greater_than_equal" // CompareGreaterThanEqual()	Provides a boolean-type comparison for two strings. The strings may be compared numerically or lexically.
"metaphone" // CompareMetaphone()	Provides groupings of differently, yet correctly spelled names. May be used to provide phonetic comparisons.
"phonex" // ComparePhonex()	Provides phonetic comparisons.
"contains" // ContainsString()	Provides a boolean-type test for sub-string inclusion.
"starts_with" // BeginsWith()	Provides a boolean-type test for sub-string inclusion.
"ends_with" // EndsWith()	Provides a boolean-type test for sub-string inclusion.
"pattern" // ContainsPattern()	Provides a boolean-type test for sub-string inclusion.

FIG. 24B

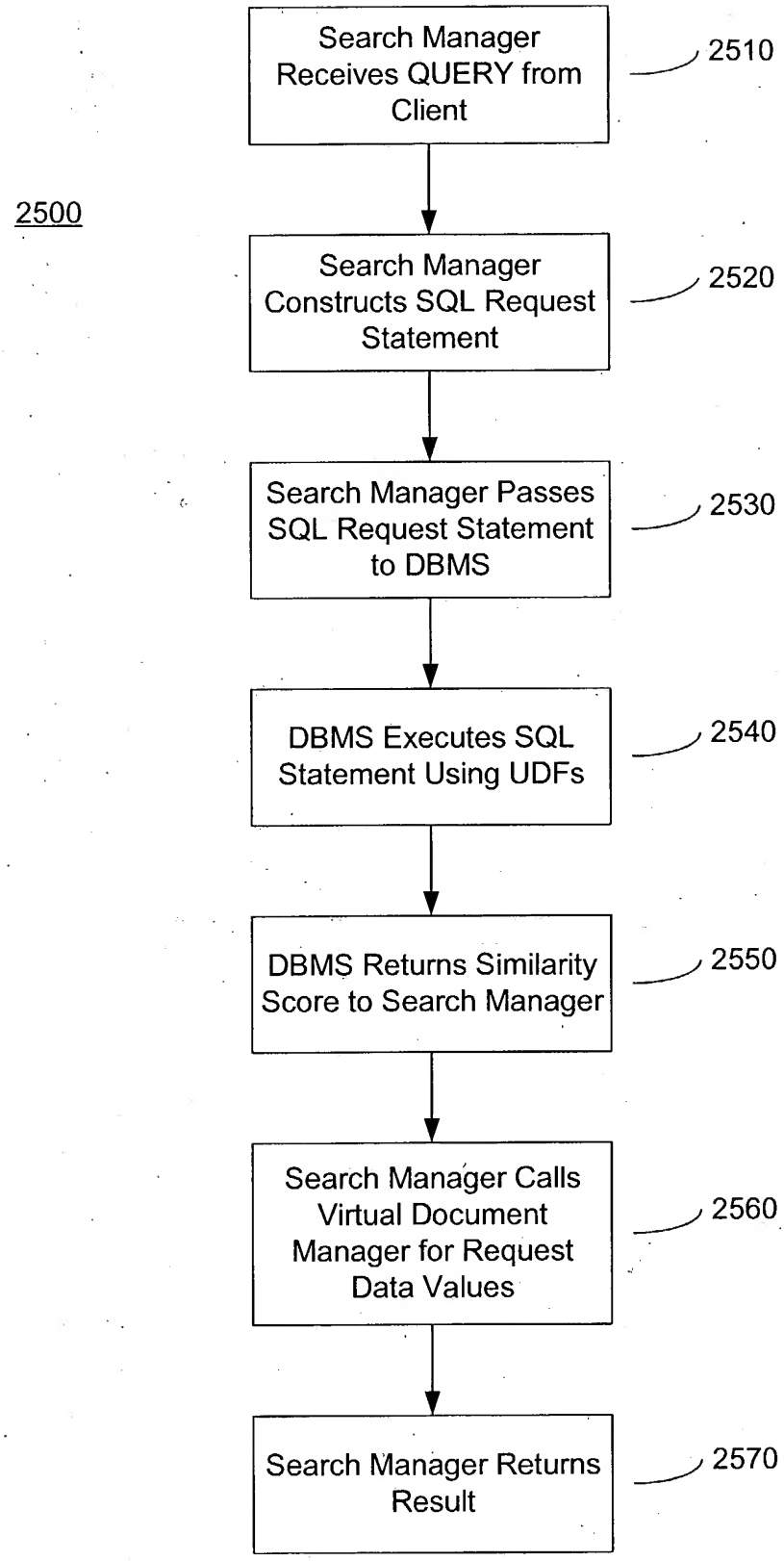
2500
Search Manager Receives QUERY from Client
2510
Search Manager Constructs SQL Request Statement
2520
Search Manager Passes SQL Request Statement to DBMS
2530
DBMS Executes SQL Statement Using UDFs
2540
DBMS Returns Similarity Score to Search Manager
2550
Search Manager Calls Virtual Document Manager for Request Data Values
2560
Search Manager Returns Result
2570

FIG. 25